

ABSTRACT OF THE DISCLOSURE

The present invention provides a data processing apparatus and method for predicting the execution of an instruction flow changing instruction. The data processing
5 apparatus has a processor operable to execute instructions, and a prefetch unit operable to prefetch instructions from a memory prior to sending those instructions to the processor for execution. The prefetch unit is operable to determine for a prefetched instruction whether that prefetched instruction is an instruction flow changing instruction, and based thereon to determine a fetch address for a next instruction to be prefetched by the
10 prefetch unit. A return stack is also provided which is accessible by the prefetch unit and operable to hold one or more addresses. Prediction logic is provided which is operable, if the prefetched instruction is a conditional instruction, to predict whether that prefetched instruction will be executed by the processor, the prefetch logic being operable to determine the fetch address dependent on the prediction from the prediction
15 logic. In the event that the prefetched instruction is a first type of instruction flow changing instruction and is conditional, and if the prediction logic predicts that that prefetched instruction will be executed, the prefetch logic is operable to determine as the fetch address an address obtained from the return stack. By this approach, the prefetch unit is able to provide an effective prediction for instruction flow changing instructions of
20 the first type, and further can predict the fetch address in instances where that first type of instruction flow changing instruction is predicted to be executed.